

Notice of Allowability

Application No.

10/727,945

Examiner

Shouxiang Hu

Applicant(s)

AHLGREN ET AL.

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 2-7-05 Amendment.
2. ☒ The allowed claim(s) is/are 1,4-7 and 9-13.
3. ☒ The drawings filed on 26 January 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 20050414.
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____



SHOUXIANG HU
PRIMARY EXAMINER

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Lesile S. Szivos (RN: 39,394) on April 7, 2005.

The application has been amended as follows:

IN THE CLAIMS

Claim 1 (Currently Amended) A bipolar transistor Comprising:

a base region comprising an intrinsic base region and surrounding raised extrinsic base regions;

a block polysilicon emitter region comprising: at least a polysilicon emitter located atop and in contact with said intrinsic base region, and a vertical sidewall formed of an insulator and having a vertically-straight outer edge;

a first silicide layer locate on the raised extrinsic base region, said first silicide layer having an inner vertical edge that is self-aligned to a said vertical sidewall of the block polysilicon emitter region;

a second silicide layer located on said polysilicon emitter and within the block polysilicon emitter region, said second silicide layer having an outer edge that is vertically self-aligned to said inner vertical edge of the first silicide layer;

and a self-aligned emitter contact border having an inner vertical edge that is vertically aligned to said inner vertical edge of said first silicide layer,

wherein said inner vertical edge of said self-aligned emitter contact border is in contact with said vertically-straight outer edge of said vertical sidewall; and

wherein a top of said self-aligned emitter contact border substantially levels with a top of said vertical sidewall.

~~and said vertical sidewalls of said block emitter region that is located atop the raised extrinsic base region.~~

Claims 2-3 (Cancelled)

Claim 4 (Previously Amended) The bipolar transistor of Claim 1 wherein the polysilicon emitter has an upper surface that is above an upper surface of the raised extrinsic base.

Claim 5 (Original) The bipolar transistor of Claim 1 wherein the self-aligned emitter contact border is defined by a spacer.

Claim 6 (Currently Amended) The bipolar transistor of Claim 5 wherein the spacer provides isolation between said base region and said polysilicon emitter of the block polysilicon emitter region.

Claim 7 (Original) The bipolar transistor of Claim 5 wherein the spacer is a wide spacer, a double spacer or an L-shaped spacer.

Claim 8 (Cancelled).

Claim 9 (Currently Amended) The bipolar transistor of Claim 1 further comprising an emitter contact located directly atop the self-aligned emitter contact border and the block polysilicon emitter region.

Claim 10 (Currently Amended) The bipolar transistor of claim 9, wherein the emitter contact has a dimension that is larger than a dimension of the block polysilicon emitter region.

Claim 11 (Original) The bipolar transistor of Claim 1 further comprising a base contact located directly atop the raised extrinsic base region.

Claim 12 (Original) The bipolar transistor of Claim 1 further comprising a silicided collector reach-through region located in a surface of a Si-containing substrate that underlies said transistor.

Claim 13 (Original) The bipolar transistor of Claim 12 further comprising a collector contact atop said silicided collector reach-through region.

Claims 14-28 (Cancelled).

Allowable Subject Matter

Claims 1, 4-7 and 9-13 are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is 571-272-1654. The examiner can normally be reached on Monday through Thursday, 7:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SH
April 14, 2005



SHOUXIANG HU
PRIMARY EXAMINER